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DOCKET No. FAA-1999-6411: AMENDMENT NO. 21-82, EQUIVALENT SAFETY PROVISIONS FOR FUEL TANK SYSTEM FAULT TOLERANCE EVALUATIONS (SFAR 88)

Dear Madam/Sir,

Airbus thanks the FAA for offering the public an opportunity to comment on FAR Amendment No. 21-82, and wishes to draw the FAA's attention to two issues resulting from the adoption of this amendment:

1. **Advisory material that provides guidance on the process (method) by which the equivalent safety finding will be determined needs to be published.**

   If this information is not made available, there is a risk that the "level playing field" as discussed in the preamble of Amendment 21-82 and the ultimate safety objectives of the fuel tank safety initiative will not be achieved. The lack of guidance material puts the onus on the applicant and the certificator to decide what is equivalently safe and what is the criteria for this decisions. Given the same set of circumstances two different decisions may be made if a common set of standards/ground rules are not defined. These decisions may deviate even more if economic viability is used as part of the equivalent safety argument.

2. **§21.21(b)(1) allows TC applicants to show an equivalent level of safety for those Part 25 provisions that are not complied with. However, issuance of Amendment 21-82 seems to indicate a change of FAA policy and the potential need to change the regulation (§25.981) and its associated guidance material (AC 25.981-1B/-C and AC 25.981-2), in order to clarify the overall fuel tank safety objectives and possible methods of compliance.**

   Amendment 25-102 and its associated advisory material were written under the pretext that inerting was not "practical" and that "fuel tank explosions" should be regulated by two separate and independent paths:
   - path 1 - ignition prevention within the fuel system design assuming a flammable atmosphere is present [§25.981(a)]
   - path 2 - minimization of the development of flammable vapors [§25.981(c)] or means to mitigate the effects of an ignition of fuel vapors within fuel tanks

     Note: It is viewed that §25.981(b) is equally applicable to system designs developed for compliance to §25.981(a) or (c)

In fact, AC 25.981-1C §10.c.(1) states "The system safety analysis should be prepared considering all airplane in-flight, ground, service, and maintenance conditions, assuming that an explosive fuel air mixture is present in the vapor space of fuel tanks and vent systems at all times, unless the fuel tank has features that mitigate the effects of tank ignition (e.g. polyurethane foam)." The guidance material only allows for an alleviation to the assumption if the ignition of fuel vapors within the fuel tanks is such that no damage caused by an ignition would impede continued safe flight and landing. Inerting systems do not meet this performance requirement and therefore cannot be taken credit for in the ignition prevention safety analysis. Inerting systems reduce or suppress the presence of flammable vapors; they do not mitigate the damage to the airplane if ignition occurs. That is, if the inerting system is inoperative and an ignition source occurs, the airplane would be damaged such that the airplane could not continue safe flight and landing.

The intent of Amendment 21-82, as evidenced by the preamble statement ("Type certificate holders may therefore wish to propose use of reduced fuel tank flammability to mitigate the need to make other more costly changes or implement expensive maintenance actions to prevent certain fuel tank ignition sources"), seems to contradict the compliance philosophy of Amendment 25-102, in particular the independence of fuel tank ignition prevention by design and the minimization of flammable vapors.

It is therefore not understood how the compliance demonstration required by amendment 25.-102 §25.981(a) (SFAR 88 regulation basis), and as interpreted by AC 25.981-1C, can be achieved with inerting unless the regulation itself (§25.981) and its interpretative material (AC 25.981-1C and AC 25.981-2) are changed.

It is therefore suggested that the FAA consider revising §25.981 and its associated ACs to reflect its new policy of allowing overall fuel tank safety to be judged based on a combination of fuel tank ignition prevention measures and control of the flammable environment or mitigation of the ignition and subsequent aircraft damage.

This revised regulation would ease the certification burden of both the applicant and the certificator because it would clearly define the safety objectives and the method of compliance. The ambiguity faced in complying with today's regulation would be alleviated.

Yours sincerely,

(Signatures on the original)

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